

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions of the claims.

1-58. (Canceled)

59. (Original) A method of mass spectrometry comprising:

attenuating a beam of ions by repeatedly switching an ion beam attenuator between
a first mode of operation and a second mode of operation at a first frequency;
and
mass analysing or acquiring, histogramming, accumulating, recording or outputting
mass spectra, mass spectral data or mass data at or with a second frequency,
wherein said first frequency is greater than said second frequency.

60. (Original) A method of mass spectrometry comprising:

providing an ion beam attenuator;
providing an ion guide or gas collision cell downstream of said ion beam attenuator
to convert a non-continuous beam of ions into a substantially continuous beam
of ions;
providing a mass analyser arranged downstream of said ion guide or gas collision
cell; and
switching said ion beam attenuator between a first mode of operation and a second
mode of operation at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 times faster
than said mass analyser mass analyses or acquires, histograms, accumulates,
records or outputs mass spectra, mass spectral data or mass data.

61-65. (Canceled)

66. (Currently amended) A mass spectrometer comprising:

attenuating means for attenuating an ion beam attenuator for transmitting and attenuating a beam of ions by cyclically closing and opening the means for attenuating to output a pulsed non-continuous beam of ions characterized by a mark space ratio,

wherein a closed low-transmission mode of operation blocks the ion beam from exiting the attenuating means, and an open high-transmission mode of operation allows ions to pass through and exit the attenuating means; and

switching means for switching between a first attenuation mode of operation wherein ~~an~~ said ion beam is attenuated by a first factor associated with a first mark space ratio and a second attenuation mode of operation wherein said ion beam is attenuated by a second different factor associated with a second different mark space ratio.[[;]]

wherein in said ~~first attenuation mode of operation~~ said ion beam attenuator is repeatedly switched between a first closed low-transmission mode of operation wherein the ion transmission is substantially 0% and a second in said open high-transmission mode of operation wherein the ion transmission is > 0% with a first mark space ratio; and

~~wherein in said second attenuation mode of operation said ion beam attenuator is repeatedly switched between a first mode of operation wherein the ion transmission is substantially 0% and a second mode of operation wherein the ion transmission is > 0% with a second different mark space ratio~~

wherein the first and second attenuation modes provide different average fluxes of ions exiting the means for attenuating.

67-69. (Canceled)

70. (Original) A method of mass spectrometry comprising:

providing an ion beam attenuator for ~~transmitting and~~ attenuating a beam of ions;

cyclically closing and opening the ion beam attenuator to output a pulsed non-continuous beam of ions characterized by a mark space ratio.

wherein a closed low-transmission mode of operation blocks the beam of ions from exiting the ion beam attenuator, and an open high-transmission mode of operation allows ions to pass through and exit the ion beam attenuator;
and

switching between a first attenuation mode of operation wherein ~~an~~ the ion beam is attenuated by a first factor associated with a first mark space ratio and a second attenuation mode of operation wherein said ion beam is attenuated by a second different factor associated with a second different mark space ratio.([;])

wherein in said ~~first attenuation mode of operation~~ said ion beam attenuator is repeatedly switched between a first closed low-transmission mode of operation wherein the ion transmission is substantially 0% and a second in said open high-transmission mode of operation wherein the ion transmission is > 0% with a first mark space ratio; and

~~wherein in said second attenuation mode of operation said ion beam attenuator is repeatedly switched between a first mode of operation wherein the ion transmission is substantially 0% and a second mode of operation wherein the ion transmission is > 0% with a second different mark space ratio~~

wherein the first and second attenuation modes provide different average fluxes of ions exiting the ion beam attenuator.